

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method ~~of~~ for depositing a silicon germanium film on a substrate comprising:

providing a substrate within a process chamber;

heating the substrate to a temperature within a range from about 500°C to about 900°C;

exposing the substrate to a first deposition gas comprising ~~SiH₄, GeH₄, HCl~~ silane, germanium, hydrogen chloride, a carrier gas and at least one dopant gas; ~~and depositing to deposit~~ a first silicon germanium material epitaxially on the substrate, wherein the first silicon germanium material contains a dopant concentration of greater than 1×10^{20} atoms/cm³; and

exposing the substrate to a second deposition gas comprising dichlorosilane and a germanium source to deposit a second silicon germanium material on the substrate.

2. (Currently Amended) The method of claim 1, wherein the at least one dopant gas is a boron containing compound selected from the group consisting of ~~BH₃, B₂H₆, B₃H₈, Me₃B, Et₃B~~ borane, diborane, triborane, trimethylborane, triethylborane and derivatives thereof.

3. (Currently Amended) The method of claim 2, wherein the first silicon germanium material is deposited ~~with~~ containing a boron concentration within a range from about ~~[[1]]~~ 2×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

4. (Original) The method of claim 1, wherein the at least one dopant gas includes an arsenic containing compound or a phosphorus containing compound.

5. (Currently Amended) The method of claim 1, wherein the carrier gas is selected from the group consisting of ~~H₂, Ar, N₂, He~~ hydrogen, argon, nitrogen, helium and combinations thereof.
6. (Currently Amended) The method of claim 5, wherein the first deposition gas further comprises a member selected from the group of consisting of a carbon source, ~~Cl₂SiH₂~~ dichlorosilane and combinations thereof.
7. (Currently Amended) The method of claim 5, wherein the temperature is within a range from about 600°C to about 750°C and the process chamber is at a pressure within a range from about 0.1 Torr to about 200 Torr.
8. (Currently Amended) The method of claim 5, wherein the silicon germanium film ~~is grown to~~ has a thickness within a range from about 100 Å to about 3,000 Å.
9. (Original) The method of claim 8, wherein the silicon germanium film is deposited within a device used for CMOS, Bipolar or BiCMOS application.
10. (Currently Amended) The method of claim 9, wherein the silicon germanium film is deposited during a fabrication step is selected from the group consisting of contact plug, source/drain extension, elevated source/drain and bipolar transistor.
11. (Currently Amended) The method of claim 1, wherein the first silicon germanium material is deposited with a first thickness, ~~therein SiH₄ is replaced by Cl₂SiH₂,~~ and a second silicon germanium material is deposited with a second thickness on the first silicon germanium material.
12. (Currently Amended) The method of claim 1, wherein a silicon-containing material is deposited on the substrate before the first silicon germanium material.

13. (Currently Amended) The method of claim 12, wherein the silicon-containing material is deposited by a deposition process comprising Cl_2SiH_2 dichlorosilane.

14. (Currently Amended) A selective epitaxial method ~~of growing~~ for depositing a silicon germanium film on a substrate comprising:

providing a substrate within a process chamber;

heating the substrate to a temperature within a range from about 500°C to about 900°C; and

exposing the substrate to a deposition gas comprising SiH_4 silane, a germanium source, an etchant source, a carrier gas and at least one dopant gas; ~~and growing to~~ selectively form a silicon germanium material ~~with~~ containing a dopant concentration within a range from about 2×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

15. (Currently Amended) The method of claim 14, wherein the germanium source is selected from the group consisting of GeH_4 , Ge_2H_6 , Ge_3H_8 , Ge_4H_{10} germane, digermane, trigermane, tetragermane and derivatives thereof.

16. (Currently Amended) The method of claim 15, wherein the carrier gas is selected from the group consisting of H_2 , Ar , N_2 , He hydrogen, argon, nitrogen, helium and combinations thereof.

17. (Currently Amended) The method of claim 16, wherein the temperature is within a range from about 600°C to about 750°C and the process chamber is at a pressure within a range from about 0.1 Torr to about 200 Torr.

18. (Currently Amended) The method of claim 17, wherein the etchant source is selected from the group consisting of HCl , SiCl_4 , CCl_4 , H_2CCl_2 , Cl_2 , hydrogen chloride, tetrachlorosilane, tetrachloromethane, dichloromethane, chlorine, derivatives thereof and combinations thereof.

19. (Currently Amended) The method of claim 14, wherein the at least one dopant gas is a boron containing compound selected from the group consisting of ~~BH₃, B₂H₆, B₃H₈, Me₃B, Et₃B~~ borane, diborane, triborane, trimethylborane, triethylborane and derivatives thereof.
20. (Original) The method of claim 14, wherein the at least one dopant gas is selected from the group consisting of an arsenic containing compound and a phosphorus containing compound.
21. (Currently Amended) The method of claim 14, wherein the deposition gas further comprises a member selected from the group consisting of a carbon source, ~~Cl₂SiH₂~~ dichlorosilane and combinations thereof.
22. (Currently Amended) The method of claim 17, wherein the silicon germanium film ~~is grown to~~ has a thickness within a range from about 100 Å to about 3,000 Å.
23. (Original) The method of claim 22, wherein the silicon germanium film is deposited within a device used for CMOS, Bipolar or BiCMOS application.
24. (Currently Amended) The method of claim 23, wherein the silicon germanium film is deposited during a fabrication step is selected from the group consisting of contact plug, source/drain extension, elevated source/drain and bipolar transistor.
25. (Currently Amended) The method of claim 14, wherein the silicon germanium material is deposited with a first thickness, ~~therein SiH₄~~ thereafter, the silane is replaced by ~~Cl₂SiH₂~~ dichlorosilane, and a second silicon germanium material is deposited with a second thickness on the silicon germanium material.
26. (Previously Presented) The method of claim 14, wherein a silicon-containing material is deposited on the substrate before the silicon germanium material.

27. (Currently Amended) The method of claim 26, wherein the silicon-containing material is deposited by a deposition process comprising Cl_2SiH_2 dichlorosilane.

28-41. (Cancelled)

42. (Currently Amended) A method ~~of~~ for depositing a silicon ~~[[containing]]~~ germanium film on a substrate comprising:

placing a substrate within a process chamber;

heating the substrate to a temperature within a range from about 500°C to about 900°C; and

~~maintaining the process chamber at a pressure in a range from about 0.1 Torr to about 200 Torr;~~

exposing the substrate to a deposition gas comprising a silicon-containing gas, a germanium source, ~~HCl, at least one~~ hydrogen chloride and a boron-containing dopant gas and ~~a carrier gas selected from the group consisting of N₂, Ar, He and combinations thereof; and depositing to~~ selectively deposit a silicon ~~[[containing]]~~ germanium material epitaxially on the substrate, wherein the silicon germanium material contains a boron concentration of greater than about 1×10^{20} atoms/cm³.

43-55. (Cancelled)